

Article

Buffer or Boost? The Role of Job Resources in Predicting Teacher Work Engagement and Emotional Exhaustion in Different School Types

Christian Reintjes ^{1,*} , Till Kaiser ^{1,*} , Isabelle Winter ¹ and Gabriele Bellenberg ² ¹ Department of Education and Cultural Sciences, Osnabrück University, 49074 Osnabrück, Germany; isabelle.winter@uni-osnabrueck.de² Faculty of Philosophy and Educational Science, Ruhr University Bochum, 44801 Bochum, Germany; gabriele.bellenberg@rub.de

* Correspondence: christian.reintjes@uni-osnabrueck.de (C.R.); till.kaiser@uni-osnabrueck.de (T.K.)

Abstract: Drawing upon the Job Demands-Resources (JD-R) model, this study examines the association between different school types and teacher work engagement as well as emotional exhaustion, in addition to the moderating roles of job (collegial and school management support) and individual (resilience) resources. We utilized multivariate regression models with interaction terms, applied to data from the GEW-Frühjahrsreport 2025—a cross-sectional quantitative survey assessing teacher well-being (TWB) among a representative sample of 5859 teachers in North Rhine-Westphalia. The findings reveal that vocational and special needs schools are associated with significantly higher work engagement and lower emotional exhaustion compared to other school types. Resilience emerged as the strongest predictor across both outcomes, followed by school management support. Moderation analyses indicate predominantly boosting effects, meaning that job resources exert greater positive influence in already-favorable school contexts. These results challenge the assumption that job resources primarily serve as buffers in high-demand settings. Instead, the study highlights the importance of systemic conditions and leadership quality in enabling the effective utilization of resources. Implications are discussed with regard to professional development, structural school reform, and the integration of well-being into educational policy.



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Keywords: teacher well-being; resilience; work engagement

1. Introduction

The German education system is highly differentiated. The differing prestige, varying resources, and heterogeneous student body appear to impact teachers' perceptions of job demands, according to previous studies (e.g., [Robert Bosch Stiftung, 2022](#)). Given that previous studies indicate that emotional exhaustion, stemming from various demands, is a significant concern for teachers and is naturally linked to work engagement (e.g., [Robert Bosch Stiftung, 2022](#))—a connection particularly relevant from a school development perspective—we focus on these central constructs as outcomes in our study. Work engagement is defined as a positive, fulfilling, work-related state of mind characterized by vigor, dedication, and absorption ([Schaufeli & Bakker, 2003](#)). Emotional exhaustion refers to feelings of being emotionally overextended and depleted of emotional resources ([Maslach et al., 1996](#)).

Our study aims to (1) examine the relationship between school type and teacher work engagement as well as emotional exhaustion, (2) assess the role of job resources (collegial

and leadership support) and individual resources (resilience) in relation to these constructs, and (3) investigate how job resources moderate the association between school type and teacher work engagement as well as emotional exhaustion, specifically testing for buffering effects (reducing the negative impact of demanding school environments) and boost effects (enhancing positive outcomes in less-demanding environments).

We address these research questions by using a large representative sample ($n = 5225$, [Reintjes et al., 2025](#)) and multivariate regression models with interaction effects. To our knowledge, this is the first study that addresses these specific research gaps in this manner. In the following, we describe the current state of research and generate specific hypotheses.

1.1. State of Research

1.1.1. School Types and Job Demands

The German school system is highly differentiated, particularly in the secondary school track, where various different school types can be found (e.g., [Solga, 2008](#)). While the most prestigious secondary school, the Gymnasium (grammar schools), prepares students for tertiary education with the Abitur diploma, other school forms, such as Hauptschule, Realschule, Sekundarschule, and Oberschule (referred to collectively as secondary schools), are more vocationally oriented. Additionally, Gesamtschulen (comprehensive schools) provide the opportunity to acquire diplomas from multiple educational tracks, including the Abitur. These schools are often assumed to impose higher demands on teachers due to their heterogeneity in student composition and educational goals.

Recent empirical findings confirm that school context significantly affects teacher stress and engagement. In a large-scale study with over 5000 teachers, [Reintjes et al. \(2025\)](#) showed that teachers at vocational schools and special education schools reported higher levels of work engagement and lower levels of emotional exhaustion compared to their peers in other school forms. These results challenge the common assumption that these contexts are necessarily more burdensome and suggest a more nuanced view of school-type-related demands. The findings point to the importance of matching teacher characteristics and support structures with the specific demands of different school types.

Moreover, [Schulze-Hagenest et al. \(2023\)](#) demonstrated that emotional exhaustion among teachers is significantly influenced by school contextual variables, such as the socioeconomic composition of the student body and institutional resources. This aligns with the findings of [Wartenberg et al. \(2023\)](#), whose meta-analysis highlights how contextual stressors contribute to variations in job satisfaction and well-being across school types.

Although teachers at comprehensive and secondary schools have been found to be more vulnerable to stress due to heterogeneity and resource scarcity ([Robert Bosch Stiftung, 2022](#)), these effects are not uniform. Rather, they are mediated by personal and organizational resources, as detailed below.

1.1.2. Job Resources in Teaching (Social Support and Resilience)

In the following, we distinguish between structural or organizational and individual resources. Among structural resources, social support plays a dominant role as a job resource for teachers. For instance, in the Potsdam Teacher Study ([Schaarschmidt & Kieschke, 2013](#)), the health-promoting effects of the perceived social support from colleagues on physical and mental well-being, the number of sick days, and the impact of stress factors (such as difficult student behavior) could be demonstrated. Perceived social support from school leadership and the promotion of a positive climate show similar effects; they highlight the importance of school leadership.

Within the teaching profession, job resources can be broadly categorized into structural/organizational and individual factors. Among the structural resources, social

support—particularly from colleagues and school leadership—has been consistently identified as one of the most significant predictors of teacher well-being (TWB) and job satisfaction.

In their systematic review, [Hascher and Waber \(2021\)](#) emphasize that TWB is strongly shaped by social relationships at school. Collegial collaboration and positive professional climates are not only buffers against stress but are associated with increased satisfaction and commitment. These findings are reinforced by [Cann et al. \(2023\)](#), who find that organizational interventions aimed at improving social support—such as mentoring and coaching—are among the few consistently effective well-being strategies in educational settings.

A particularly nuanced insight comes from [Besa et al. \(2022\)](#), who identify school leadership behavior as a critical antecedent of collaborative school climates and teachers' job satisfaction as well as organizational commitment. Their structural equation model indicates that personal leadership behavior (e.g., active motivation of staff to collaborate) exerts both direct and indirect effects (via a positive cooperation climate) on job satisfaction and staff retention. In contrast, structural leadership behaviors (e.g., the provision of time and space for cooperation) showed weaker and more inconsistent effects. This highlights the essential role of relational leadership qualities in fostering supportive environments.

On the individual level, teacher resilience has emerged as one of the most robust predictors of occupational well-being. Defined as the psychological capacity to adapt effectively to stress and adversity, resilience acts as a buffer against burnout and emotional exhaustion while promoting engagement and satisfaction ([Mansfield, 2021](#)).

According to the AWaRE model (Aligning Wellbeing and Resilience in Education) of [Hascher et al. \(2021\)](#), resilience is not only a trait but a process that interacts dynamically with contextual challenges and supports. The model integrates appraisal, emotion regulation, and goal orientation as key components of a resilient response that fosters well-being. Empirical work by [Dreer \(2023\)](#) and [Dicke et al. \(2017\)](#) corroborates this dynamic understanding: teachers with high resilience report greater teaching efficacy and reduced emotional exhaustion over time.

Further elaborating on this perspective, [Thönes et al. \(2024\)](#) argue for a fundamental reorientation of research and professional development discourses toward well-being as a criterion of teacher professionalism. Their review shows that current policy frameworks rarely integrate well-being systematically into standards for teacher education or school evaluation. They emphasize that teacher well-being should not only be seen as an outcome but also as a resource and precondition for professional practice. This idea is echoed in their theoretical modeling, which conceptualizes well-being as part of teachers' professional competence—integral to sustainable teaching careers.

In addition, [Kassis et al. \(2024\)](#) underline the bidirectional nature of social and psychological resources: while resilient teachers positively influence student resilience, this relational dynamic also reinforces their own sense of professional efficacy and purpose. Thus, social support and individual resilience appear to operate synergistically in enhancing well-being at both the individual and institutional levels.

1.1.3. The Job Demands-Resources (JD-R) Theory

The Job Demands-Resources (JD-R) theory, originally conceptualized by [Bakker and Demerouti \(2007\)](#), and recently updated ([Bakker & Demerouti, 2024](#)), provides a robust and adaptable framework for understanding how the interplay between job demands and job resources influences employee well-being and work performance (see Figure 1). It distinguishes between job demands, which are aspects of the job that require sustained effort and are associated with physiological and psychological costs (e.g., time pressure,

emotional labor), and job resources, which help to reduce those costs, foster personal growth, and sustain motivation (e.g., autonomy, collegial support, and leadership quality).

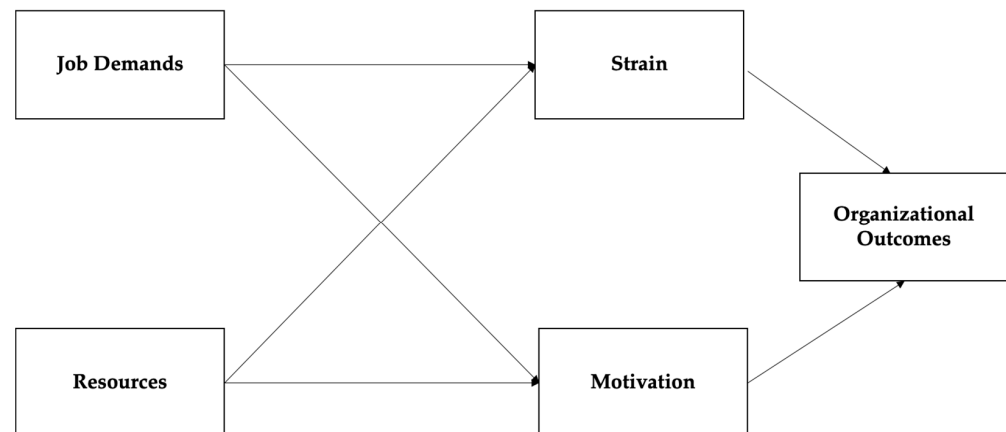


Figure 1. JD-R model.

A central strength of the model lies in its dual-pathway structure: the health impairment process, in which excessive job demands lead to burnout and strain, and the motivational process, in which job resources promote engagement and job satisfaction. Furthermore, the JD-R theory accounts for personal resources—such as resilience, optimism, and self-efficacy—as self-regulatory capacities that can enhance the beneficial effects of job resources and mitigate the adverse impact of demands.

In educational contexts, the model has been empirically substantiated. In a longitudinal study, [Dicke et al. \(2017\)](#) demonstrated that the accumulation of job resources—such as social support, instructional autonomy, and effective leadership—predicts reduced emotional exhaustion and enhanced engagement among teachers over time. Similarly, [Hascher and Waber \(2021\)](#) emphasize that resources on both the organizational (e.g., collaboration culture) and individual levels (e.g., emotion regulation) significantly affect teachers' capacity to maintain their well-being in demanding educational environments.

Beyond its basic structure, the JD-R theory also identifies two types of moderation effects: buffering effects and boosting effects. Buffering effects refer to the phenomenon where job resources mitigate the negative consequences of high workload, such as emotional exhaustion. For example, social support may reduce the psychological toll of disruptive student behavior. Furthermore, buffering can occur when job resources dampen the demotivating effect of high demands; that is, even under stress, motivation may remain stable if resources are present.

In contrast, boosting effects suggest that job resources can amplify motivational outcomes, especially in the presence of high demands. In these cases, job resources enable individuals to interpret high demands as challenges rather than threats, leading to increased motivation. For instance, a highly autonomous and well-supported teacher may feel invigorated rather than overwhelmed when faced with the implementation of a new curriculum. Boosting effects may also emerge in low-demand contexts: when job demands are minimal but resources are high, individuals may experience a motivational uplift due to the ease with which tasks can be completed, thereby reinforcing a sense of competence and professional efficacy.

Empirical work supports this differentiation. [Wartenberg et al. \(2023\)](#) found in their meta-analysis that job satisfaction and work engagement among teachers are not only shaped by the presence of resources but also by how these interact with specific job demands. [Cann et al. \(2023\)](#) additionally stress that well-designed interventions targeting

leadership quality, collegial collaboration, and workload management can activate these moderation effects in practice.

Moreover, [Hascher et al.’s \(2021\)](#) AWaRE model complements the JD-R model by offering a more detailed account of the intrapersonal mechanisms that mediate these interactions—especially appraisal processes and emotional coping strategies. These insights further clarify how resources function not only as buffers or boosters, but also as catalysts for resilience in the face of structural pressures.

In sum, the JD-R model remains one of the most influential frameworks for conceptualizing TWB. Its value lies not only in its empirical robustness but also in its adaptability to various school settings and its compatibility with broader discourses on professional identity, leadership, and sustainable educational reform.

1.2. Research Questions

1. How strongly are school types, job resources (collegial and school management support), and individual resources (resilience) correlated with work engagement and emotional exhaustion? (See Figure 2.)

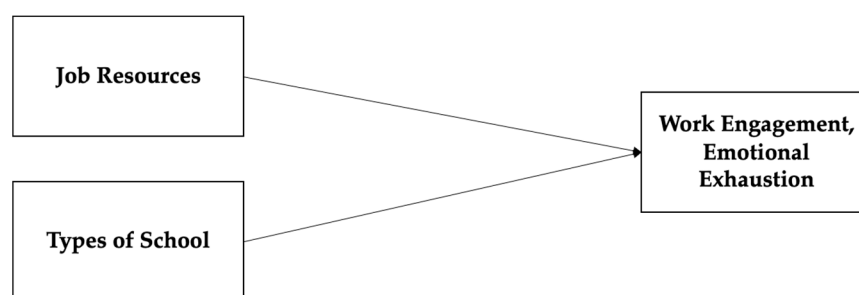


Figure 2. Graphical representation of research question 1.

2. Are job resources moderating the relationship between school types and work engagement/emotional exhaustion? (See Figure 3.)
 - 2.1 Do teachers from schools with higher demands profit more from job resources in regard to work engagement and emotional exhaustion? (Buffering effect.)
 - 2.2 Do teachers from schools with lower demands profit more from job resources in regard to work engagement and emotional exhaustion? (Boost effect.)

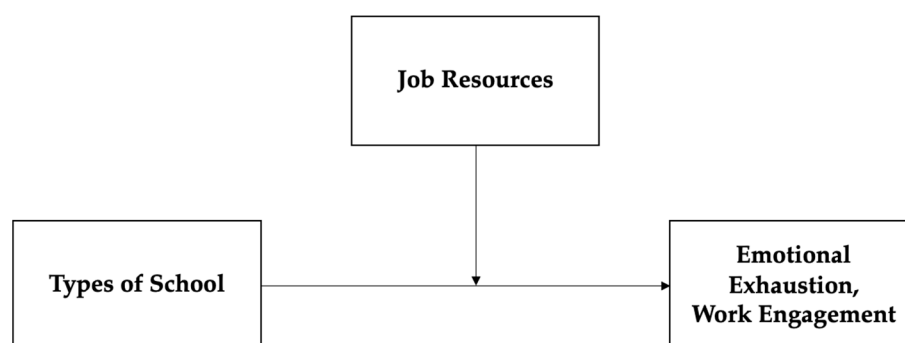


Figure 3. Graphical representation of research question 2.

2. Data and Methods

2.1. Data

Our sample is taken from the GEW study on TWB ([Reintjes et al., 2025](#)), and consists of 5859 teachers mainly from Germany, specifically from the region of North Rhine-Westphalia. Of them, 79% are female and 21% are male. The mean age is 46 years (SD = 10.0). In

total, 32.9% worked in primary schools, 12.4% in secondary schools, 14.1% in grammar schools, 19.1% in comprehensive schools, 7.7% in vocational schools, and 13.8% in special needs schools.

2.2. Methods

For our analyses, we applied multivariate regression analyses with interaction effects. Regression assumptions (e.g., multicollinearity and homoscedasticity) were tested by inspecting residuals, variance inflation factors ($VIFs < 5$) (Craney & Surles, 2002), and the Breusch–Pagan test. All models were computed using STATA 19. Based on the regression models, we estimated marginal effects to compare the effects across different groups. To adjust for multiple comparisons, we used the Bonferroni correction. To compare effect sizes both within and between models, we utilized standardized beta regression coefficients interpreting effect sizes as small ($\beta = 0.10\text{--}0.29$), medium ($\beta = 0.30\text{--}0.49$), and large ($\beta \geq 0.50$) (Fey et al., 2023; Nieminen, 2022).

2.3. Measures

Dependent Variables

Emotional exhaustion is assessed using the German version of the Maslach Burnout Inventory (Maslach et al., 1996). The inventory comprises 9 items, and is rated on a 7-point scale (“never” to “always”). The scale reliability is Cronbach’s alpha = 0.90.

Work engagement is measured using the German version of the Utrecht Work Engagement Scale (Schaufeli & Bakker, 2003). It consists of 9 items (Cronbach’s alpha = 0.92) that are scored using a 7-level frequency scale rating from “Never” to “Always”.

Independent Variables

Collegial support (Cronbach’s alpha = 0.91, 4 items) and *school management support* (Alpha = 0.95, 7 items) are assessed using the scale Arbeits-Bewertungs-Check für Lehrkräfte (ABC-L) (Job Strain Assessment for Teachers) of Schaarschmidt and Kieschke (2013).

To measure *resilience* (Cronbach’s alpha = 0.85, 11 items), we used the German Resilience-Scale (RS-11) from Schumacher et al. (2005).

Control Variables

Sex (1 = male, 2 = female), *age in years* ($M = 46$, $SD = 9.8$), *relationship status* (1 = in a relationship, 2 = not in a relationship, and 3 = no response), *children in household under 18* (1 = no, 2 = yes, and 3 = no response) and *lessons in school* ($0 < 25$ h, $1 \geq 25$ h).

3. Results

In the following section, we will first examine the adjusted means for the dependent variables based on school type and then address the previously derived research questions. We will begin with work engagement, followed by emotional exhaustion.

3.1. Work Engagement

To examine differences among school types, we calculated a multivariate regression model, controlling for job resources, individual resources, and a range of control variables (see the Measures Section). Based on this model, we computed the adjusted means (Figure 4, based on Model 1 in Table A1) and compared them using pairwise comparisons with the Bonferroni correction. Our findings indicate that work engagement is particularly pronounced in vocational schools and special needs schools. However, only the mean differences between vocational schools and secondary schools ($p < 0.001$), as well as between vocational schools and comprehensive schools ($p < 0.05$), and the differences between

special needs schools and secondary schools ($p < 0.001$) remain significant after adjusting for multiple comparisons.

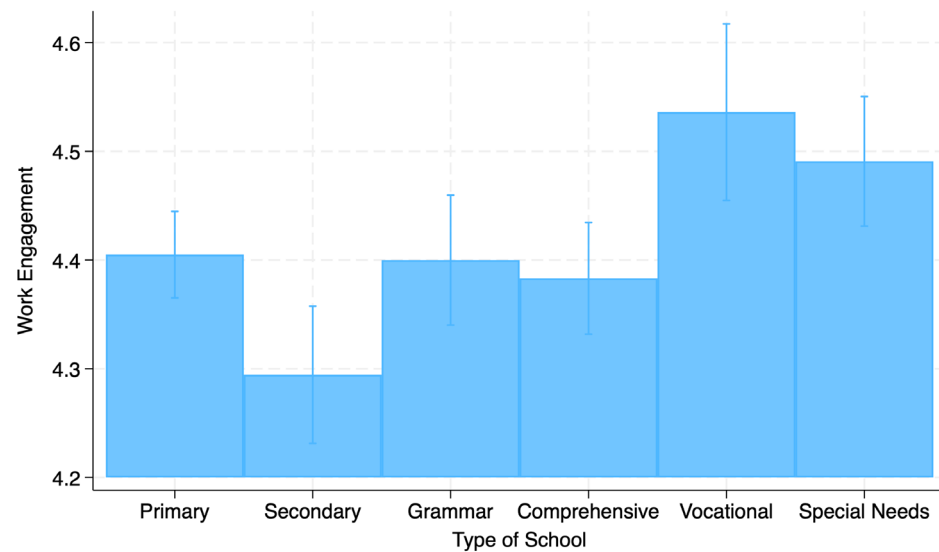


Figure 4. Adjusted means of work engagement by school type.

With regard to our first research question, which examines how strongly school types correlate with job resources and individual resources in relation to work engagement (see Figure 5, based on Model 1 in Table A1), we find that resilience is the strongest correlate ($\beta = 0.376, p < 0.001$), followed by the job resources of school management support ($\beta = 0.243, p < 0.001$) and collegial support ($\beta = 0.124, p < 0.001$). Concerning school types, similar to the previously presented results, it can be noted that vocational schools ($\beta = 0.034, p < 0.001$) and special needs schools ($\beta = 0.029, p < 0.001$) are particularly positively correlated with work engagement (in comparison to the reference category, primary schools). In light of our first research question, it can be summarized that resilience is particularly relevant, as are job resources—specifically school management support—which play an important role in work engagement. Additionally, school types are predictive of work engagement, especially vocational schools and special needs schools.

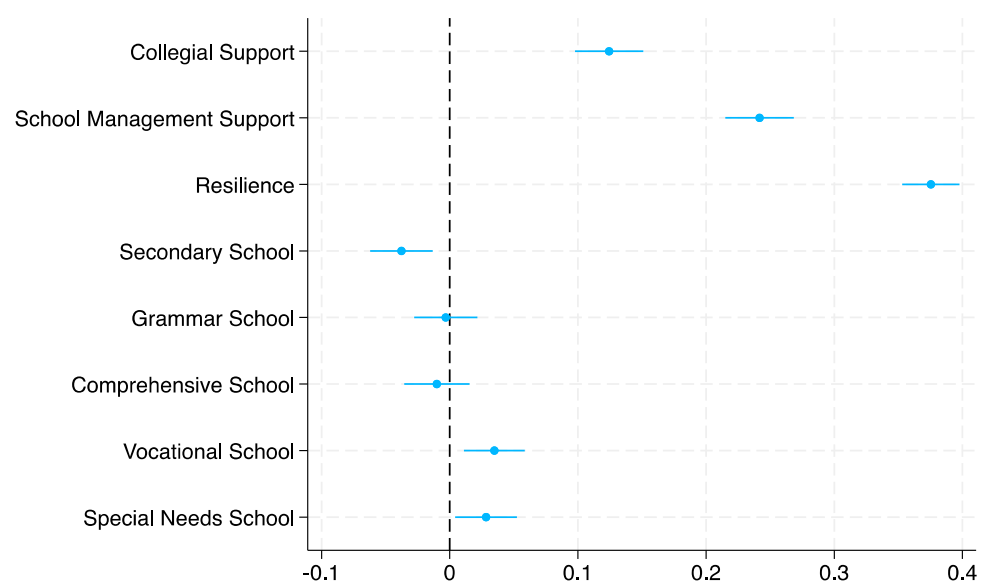


Figure 5. Standardized regression coefficients for work engagement. The reference category of school types is primary schools (beta = 0).

To answer the second research question, “Are job resources moderating the relationship between school types and work engagement?”, we calculated two moderated regressions. In the first regression, we examined the interaction between school types and collegial support, and in the second moderated regression we analyzed the interaction between school types and school management support.

Regarding the moderation of work engagement and school type through the job resource of collegial support, it first can be noted that the interaction is overall significant, $F(5, 5595) = 7.14, p < 0.001$. For further interpretation, we calculated marginal effects and performed pairwise contrast analyses with the Bonferroni correction (see Table A2). What we observe in the comparison between school types is that the relationship between collegial support and work engagement is positive to a weaker extent in primary schools compared to all other school types (see Table A2). As clearly illustrated in Figure 6 (results based on Model 2 in Table A1), the relationship between collegial support and work engagement is particularly strong and positive in vocational schools, significantly differing from all school types except grammar schools (see also Table A2). This suggests, in relation to our sub-research questions 2a and 2b, that the analyses indicate more of a boost effect of the job resource collegial support rather than a buffering effect.

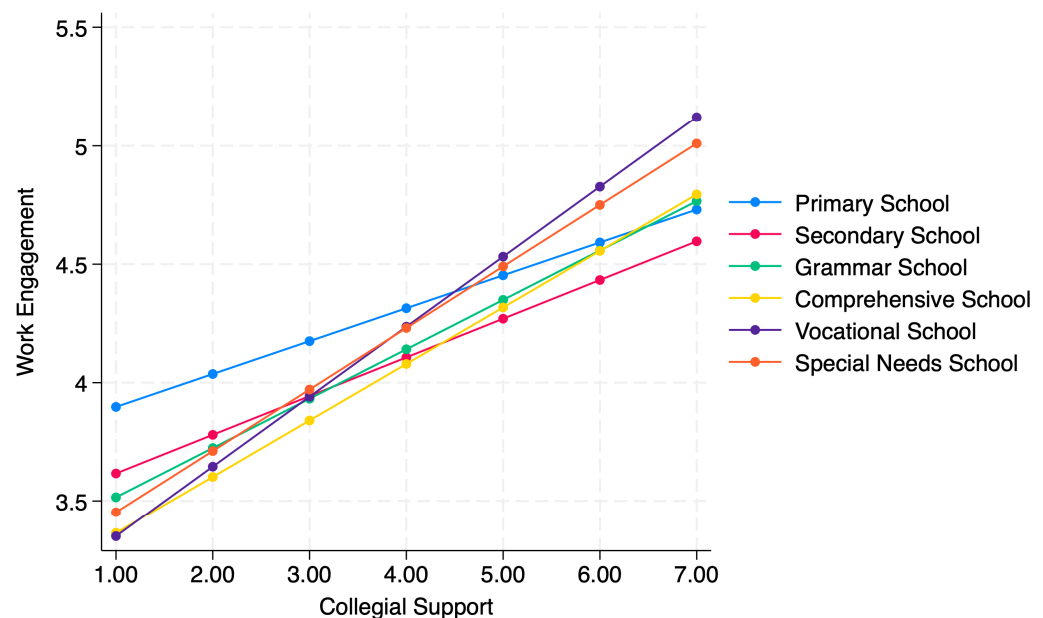


Figure 6. Moderation of work engagement and school type by collegial support.

The moderated effect of school type on work engagement through the job resource of school management support is significant, $F(5, 5566) = 6.9, p < 0.001$. If we examine Figure 7 (results based on Model 3 in Table A1), we can state that, similarly to collegial support, the relationship between school type and school management support is strongest for vocational schools and weakest for primary and secondary schools. To gain a more precise understanding of the moderation, we recalculated pairwise comparisons with Bonferroni corrections (see Table A3) and found that only the comparisons between vocational schools and primary schools, as well as between comprehensive schools and primary schools, remain significant, with the stronger positive effect not being associated with primary schools (see Table A3). Taken together, we find some evidence for the boost hypothesis; however, this is not as clear as it is with the job resource of collegial support.

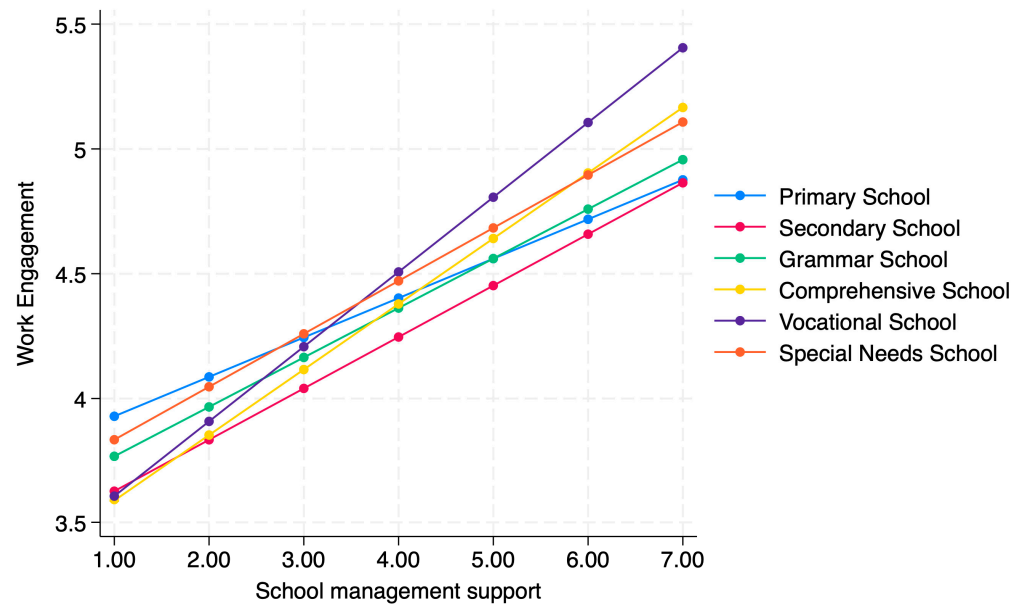


Figure 7. Moderation of work engagement and school type by school management support.

3.2. Emotional Exhaustion

Comparing the adjusted means for emotional exhaustion across school types (see Figure 8, based on Model 1 in Table A4), it is evident that primary schools, secondary schools, and comprehensive schools exhibit the highest means, while grammar schools, special needs schools, and particularly vocational schools show lower values. In the course of the pairwise comparison of marginal effects, it becomes clear that emotional exhaustion is significantly lower for vocational schools than for all other types of schools ($p < 0.05$). Additionally, the effects for grammar schools are significantly lower than the means for primary schools ($p < 0.001$), secondary schools ($p < 0.01$), and comprehensive schools ($p < 0.001$). Regarding vocational schools, a somewhat similar pattern emerges as in the previous analyses of work engagement: vocational schools show higher values for work engagement and lower values for emotional exhaustion compared to the other types of schools.

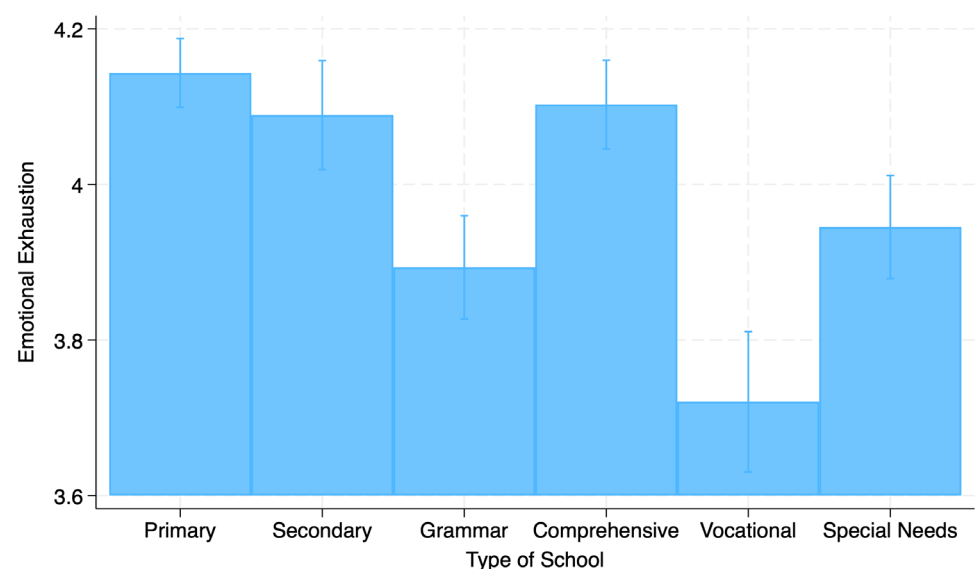


Figure 8. Adjusted means of emotional exhaustion by school type.

When comparing the effects of the predictors on emotional exhaustion (see Figure 9, based on Model 1 in Table A4), it is noticeable that resilience is the strongest predictor ($\beta = -0.311, p < 0.001$). However, it is striking that school management is also a strong predictor ($\beta = -0.251, p < 0.001$), coming directly after resilience. In comparison to these, the effects of collegial support ($\beta = -0.081, p < 0.001$) and school type are somewhat lower (Figure 9). Regarding school type, the differences observed during the discussion of the adjusted means are again evident.

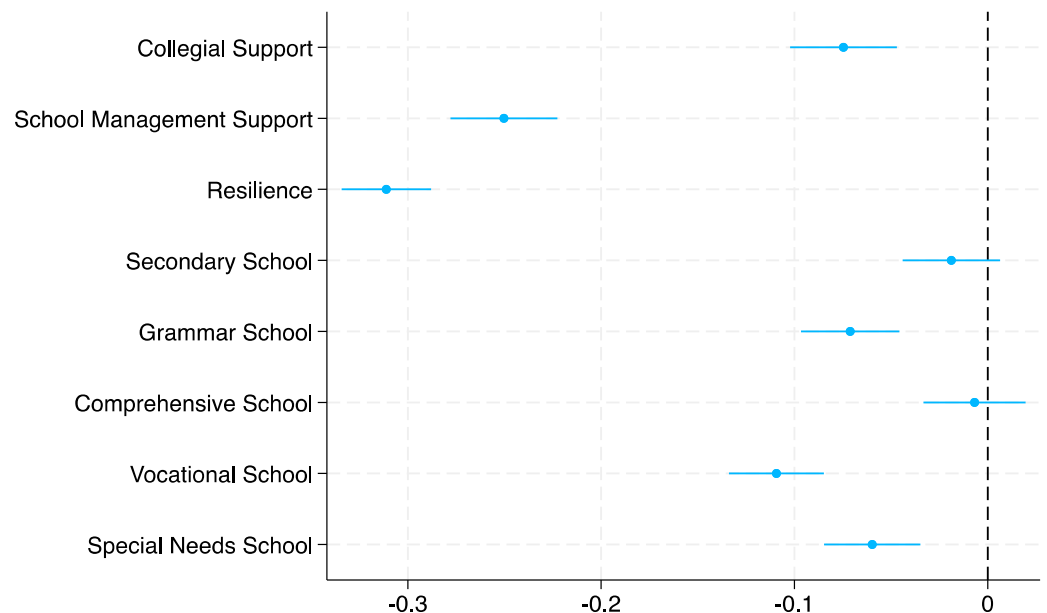


Figure 9. Comparison of standardized regressions coefficients for emotional exhaustion. The reference category of school types is primary schools (beta = 0).

Turning to the moderation of the relationship between school type and emotional exhaustion by the job resource collegial support, we first note that the moderation is significant, $F(5, 5596) = 3.45, p < 0.01$. Upon closer examination of the moderation (see Figure 10, based on Model 2 in Table A4), it is noticeable that the relationship between collegial support and emotional exhaustion is most strongly negative for the vocational school type. This is followed by special needs schools and grammar schools, while the relationship is least negatively pronounced for primary schools, secondary schools, and comprehensive schools.

In the pairwise comparison of effects with the Bonferroni correction (see Table A5), it can be determined that the differences between vocational schools and the other school types are significant ($p < 0.05$), with the exception of the contrast with comprehensive schools. Therefore, regarding research question 2, the results rather support the boost hypothesis than the buffer hypothesis.

The moderation of emotional exhaustion and school type by school management support is also significant, $F(5, 5567) = 3.81, p < 0.01$. Taking a closer look at the analyses (see Figure 11, based on Model 3 in Table A4), we see that the relationship between school management support and emotional exhaustion is also most strongly negative for the vocational school type. This is also reflected in the contrast analysis (see Table A6).

Therefore, regarding research question 2, the results rather support the boost hypothesis than the buffer hypothesis.

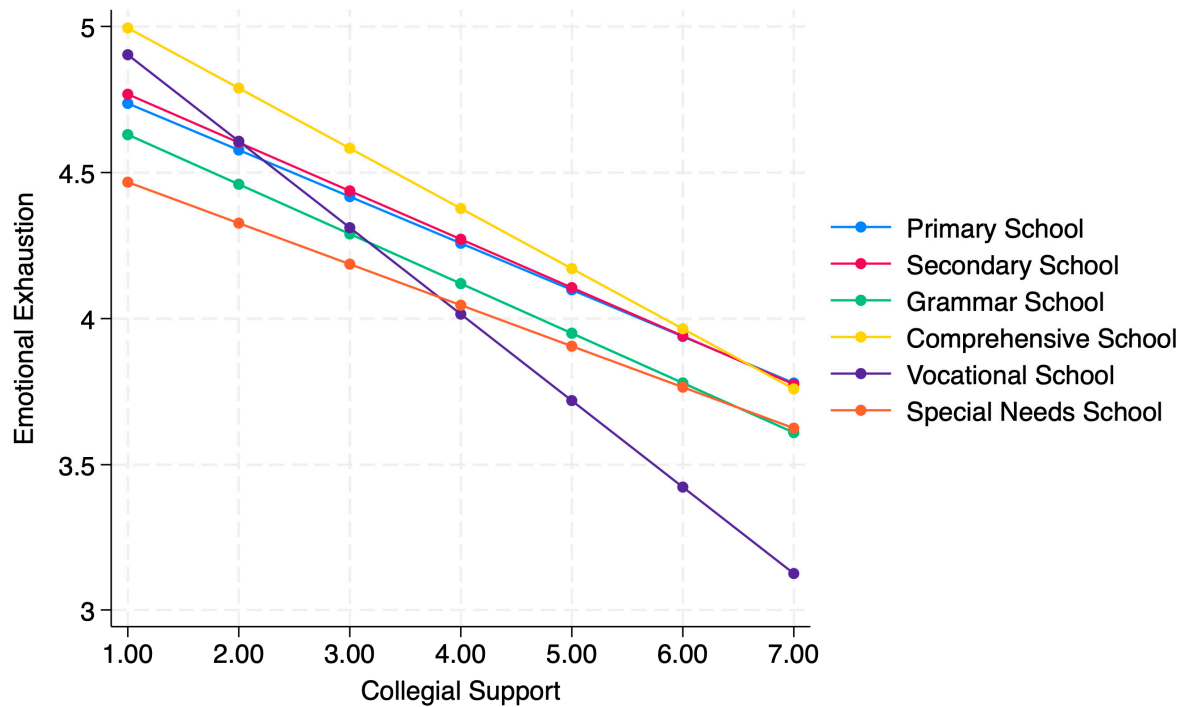


Figure 10. Moderation of emotional exhaustion and school type by collegial support.

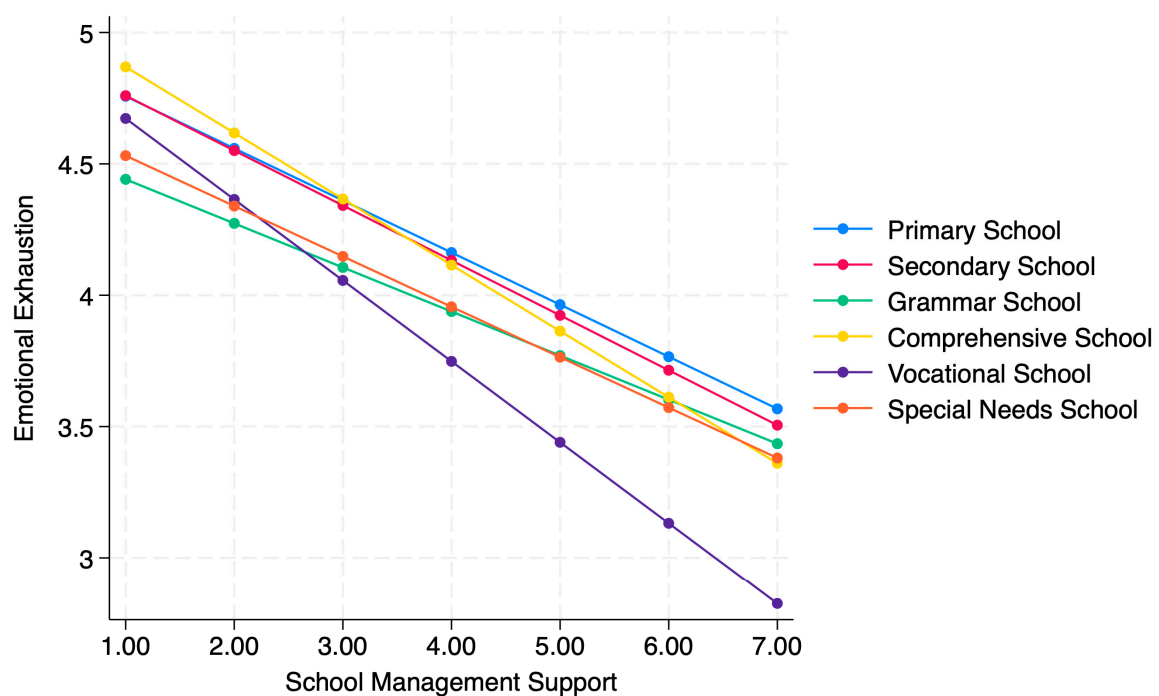


Figure 11. Moderation of emotional exhaustion and school type by school management support.

4. Discussion

Our findings underscore the critical importance of both individual and structural resources in promoting TWB. Across all analyses, resilience emerged as the most robust predictor of both work engagement and emotional exhaustion. This finding underscores its pivotal role in promoting TWB, regardless of school type or contextual resources. Unlike job-related resources, which showed more context-dependent effects, resilience consistently demonstrated high predictive strength. Beyond the individual level, this study provides strong evidence for the importance of structural job resources. Both collegial support and

school management support had significant positive associations with work engagement and negative associations with emotional exhaustion, supporting prior work by [Hascher and Waber \(2021\)](#), [Cann et al. \(2023\)](#), and [Besa et al. \(2022\)](#). The latter particularly emphasized that relational leadership behaviors, such as encouraging collaboration and participation, were more effective than merely providing structural opportunities.

The interaction analyses in this study offer a more fine-grained perspective by differentiating between the buffering and boosting effects of job resources across different school types. In line with JD-R theory extensions ([Bakker et al., 2023](#)), buffering effects describe the capacity of job resources to dampen the negative impact of high demands. While such effects are conceptually relevant in high-demand environments (e.g., comprehensive and secondary schools), the current data show that buffering effects were relatively weak. This may reflect that under resource-poor conditions, the protective capacity of job resources is constrained ([Cann et al., 2023](#); [Thönes et al., 2024](#)).

Instead, the analyses point to predominantly boosting effects: job resources had their strongest positive impact in already-favorable environments, such as vocational and special needs schools. This pattern aligns with findings from the Spring Report ([Reintjes et al., 2025](#)), which also documented lower emotional exhaustion and higher perceived support in these school types. The data suggest that in well-resourced school contexts, job resources not only protect but actively enhance motivation, particularly by enabling teachers to experience high demands as professional challenges rather than threats.

4.1. Discussion of Research Questions

In response to research question 1, we found that vocational and special needs schools are associated with higher work engagement and lower emotional exhaustion. Resilience emerged as the strongest predictor across both outcomes. Regarding research question 2, interaction effects showed predominantly boosting (rather than buffering) effects, particularly in schools with high collegial and leadership support. These findings enrich the understanding of school-type-specific working conditions. While schools in socially challenging contexts (e.g., comprehensive and some secondary schools) have long been associated with elevated stress and lower well-being ([Robert Bosch Stiftung, 2022](#)), this study emphasizes that the enabling or constraining function of school context is critical: even high levels of effort and intrinsic motivation may fail to translate into positive outcomes without the structural scaffolding of collegiality, autonomy, and leadership quality ([Wartenberg et al., 2023](#)).

Moreover, the observation that primary schools showed the weakest resource effects, despite relatively lower formal demands, adds important nuance. It suggests that organizational culture and professional climate may matter more than the formal level of task difficulty—a notion supported by research from [Thönes et al. \(2024\)](#), who argue that well-being is insufficiently embedded in teacher education and policy discourse, particularly in the area of professionalization.

This study thus contributes to bridging a gap in the research literature by linking systemic school characteristics, personal resilience, and differentiated resource effects into a coherent model. It suggests that boosting effects should not be seen as inherently inequitable, but rather as a call to action: structural reforms and leadership development programs need to be targeted, especially for schools with lower contextual enablement.

4.2. Implications for Practice and Policy

These findings have direct implications for policy and school development. While resilience training remains a valuable individual-level intervention, it must be embedded within systemic strategies. These include the following:

- Leadership development programs that emphasize relational competencies (Besa et al., 2022);
- Policy frameworks that integrate well-being into school quality standards (Thönes et al., 2024);
- Targeted resource allocation to structurally disadvantaged school types to unlock the full potential of job resources (Cann et al., 2023).

Without such efforts, there is a risk that job resources disproportionately benefit already-privileged school contexts, thereby exacerbating systemic inequalities.

4.3. Limitations and Future Directions

This study's cross-sectional design limits causal interpretation and the ability to observe dynamic processes. Longitudinal research is needed to track how job resources interact with evolving school contexts. Additionally, the self-report nature of the data may introduce bias. While we employed validated and reliable instruments (e.g., the Maslach Burnout Inventory, Utrecht Work Engagement Scale, and RS-11), all constructs were assessed via self-report, which is susceptible to common method variance and social desirability bias. Furthermore, while our scales showed high internal consistency, the cross-sectional nature of the study precludes any assessment of the temporal stability of the measured constructs. Regarding the sample, although it is large ($n = 5859$) and broadly representative of teachers in North Rhine-Westphalia with regard to gender and school type distribution, it slightly overrepresents older teachers and female respondents compared to the official statistics (MSB NRW, 2024). This may limit the generalizability of the findings to younger and male teacher populations. Regarding diversity in school types, we acknowledge that our categorization may overlook the heterogeneity within each category—for example, differences in school size, location, and social composition. Although we controlled for various background variables, future research should aim to explore intra-school-type variation in greater depth to better understand the complex realities teachers encounter across different contexts. Finally, we believe that incorporating mixed-method approaches and objective organizational indicators would offer a more comprehensive understanding of the mechanisms at work.

5. Conclusions

This study provides empirical evidence that school context significantly affects TWB and that individual and job resources play a key role in enhancing work engagement. Importantly, resources appear to exert a boosting effect in favorable settings, challenging common buffering assumptions. These insights should inform leadership training and systemic reform toward resource-enabling school environments.

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Appendix A

Table A1. Regression models for work engagement.

	Model 1	Model 2	Model 3
Resources			
Collegial support	0.124 *** (0.011)	0.177 *** (0.016)	
School management support	0.243 *** (0.009)		0.235 *** (0.013)
Resilience	0.376 *** (0.016)	0.388 *** (0.016)	0.388 *** (0.016)
School Type			
Primary school (Ref.)			
Secondary school	−0.036 ** (0.038)	−0.100 * (0.148)	−0.114 ** (0.109)
Grammar school	−0.002 0.037	−0.155 ** 0.146	−0.069 0.105
Comprehensive school	−0.009 (0.034)	−0.247 *** (0.142)	−0.172 *** (0.097)
Vocational school	0.035 ** (0.047)	−0.185 *** (0.166)	−0.122 *** (0.130)
Special needs school	0.029 * (0.036)	−0.195 ** (0.173)	−0.051 (0.118)
Interaction Terms			
School Type x Collegial Support			
Primary school (Ref.)			
Secondary school		0.0398 (0.029)	
Grammar school		0.122 * (0.0283)	
Comprehensive school		0.204 *** (0.027)	
Vocational school		0.203 *** (0.033)	
Special needs school		0.227 *** (0.032)	
School Type x School Management Support			
Primary school (Ref.)			
Secondary school			0.066 (0.025)
Grammar school			0.057 (0.025)
Comprehensive school			0.169 *** (0.022)
Vocational school			0.154 *** (0.031)
Special needs school			0.088 * (0.025)

Table A1. *Cont.*

	Model 1	Model 2	Model 3
Controls			
Sex (Ref. = male)	0.041 ** (0.029)	0.029 * (0.030)	0.046 *** (0.030)
Age	0.018 (0.001)	0.021 (0.001)	0.014 (0.001)
Relationship Status (Ref. = Yes)			
Not in a relationship	0.004 (0.034)	0.0019 (0.034)	0.005 (0.034)
No response	−0.007 (0.064)	(−0.010) (0.065)	(−0.009) (0.064)
Child in Household < 18 (Ref. = No)			
Yes	0.015 0.032	0.0149 (0.033)	0.018 (0.033)
No response	−0.037 * 0.033	−0.033 * (0.033)	−0.036 * (0.033)
Lessons in school (Ref. < 25 h)	0.023 0.025	0.019 (0.025)	0.023 (0.025)
Observations	5582	5615	5586
R²	0.304	0.270	0.298

Standardized beta coefficients; standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.**Table A2.** Contrasts with the Bonferroni correction (work engagement, Model 2).

	Contrast	Std. Err.	t	$p > t $
Secondary school vs. primary school	0.245	0.291	0.84	1.000
Grammar school vs. primary school	0.070	0.284	2.45	0.214
Comprehensive school vs. primary school	0.100	0.027	3.69	0.003
Vocational school vs. primary school	0.157	0.033	4.72	0.000
Special needs school vs. primary school	0.121	0.032	3.79	0.002
Grammar school vs. secondary school	0.045	0.034	1.33	1.000
Comprehensive school vs. secondary school	0.075	0.033	2.29	0.327
Vocational school vs. secondary school	0.132	0.038	3.48	0.008
Special needs school vs. secondary school	0.096	0.037	2.61	0.136
Comprehensive school vs. grammar school	0.030	0.032	0.94	1.000
Vocational school vs. grammar school	0.087	0.037	2.32	0.303
Special needs school vs. grammar school	0.051	0.036	1.41	1.000
Vocational school vs. comprehensive school	0.057	0.036	1.56	1.000
Special needs school vs. comprehensive school	0.021	0.035	0.60	1.000
Special needs school vs. vocational school	−0.036	0.040	−0.89	1.000

Note: Contrasts are based on Model 2 in Table A1.

Table A3. Contrasts with the Bonferroni correction (work engagement, Model 3).

	Contrast	Std. Err.	t	$p > t $
Secondary school vs. primary school	0.048	0.025	1.91	0.833
Grammar school vs. primary school	0.040	0.025	1.62	1.000
Comprehensive school vs. primary school	0.105	0.022	4.68	0.000
Vocational school vs. primary school	0.141	0.031	4.60	0.000
Special needs school vs. primary school	0.054	0.025	2.16	0.459
Grammar school vs. secondary school	−0.008	0.030	−0.26	1.000
Comprehensive school vs. secondary school	0.057	0.028	2.03	0.633
Vocational school vs. secondary school	0.093	0.035	2.67	0.113
Special needs school vs. secondary school	0.006	0.030	0.21	1.000
Comprehensive school vs. grammar school	0.064	0.027	2.34	0.288
Vocational school vs. grammar school	0.101	0.035	2.92	0.052

Table A3. *Cont.*

	Contrast	Std. Err.	t	<i>p</i> > t
Special needs school vs. grammar school	0.014	0.030	0.47	1.000
Vocational school vs. comprehensive school	0.037	0.033	1.12	1.000
Special needs school vs. comprehensive school	−0.050	0.028	−1.81	1.000
Special needs school vs. vocational school	−0.087	0.035	−2.50	0.188

Note: Contrasts are based on Model 3 in Table A1.

Table A4. Regression models for emotional exhaustion.

	Model 1	Model 2	Model 3
Resources			
Collegial support	−0.082 *** (0.012)	−0.188 *** (0.018)	
School management support	−0.251 *** (0.010)		−0.275 *** (0.015)
Resilience	−0.311 *** (0.017)	−0.324 *** (0.018)	−0.318 *** (0.017)
School Type			
Primary school (Ref.)			
Secondary school	−0.016 (0.043)	0.011 (0.165)	0.004 (0.121)
Grammar school	−0.080 *** (0.041)	−0.031 (0.162)	−0.111 ** (0.116)
Comprehensive school	−0.015 (0.037)	0.110 (0.159)	0.060 (0.107)
Vocational school	−0.104 *** (0.052)	0.074 (0.186)	0.006 (0.144)
Special needs school	−0.063 *** (0.040)	−0.092 (0.193)	−0.074 (0.131)
Interaction Terms			
School Type x Collegial Support			
Primary school (Ref.)			
Secondary school		−0.009 (0.032)	
Grammar school		−0.017 (0.031)	
Comprehensive school		−0.088 (0.030)	
Vocational school		−0.164 *** (0.037)	
Special needs school		0.033 (0.036)	
School Type x School Management Support			
Primary school (Ref.)			
Secondary school			−0.014 (0.028)
Grammar school			0.040 (0.027)
Comprehensive school			−0.080 * (0.025)
Vocational school			−0.111 ** (0.034)
Special needs school			0.010 (0.028)

Table A4. *Cont.*

	Model 1	Model 2	Model 3
Controls			
Sex (Ref. = male)	0.081 *** (0.033)	0.093 *** (0.034)	0.079 *** (0.033)
Age	−0.127 *** (0.001)	−0.129 *** (0.001)	−0.123 *** (0.001)
Relationship Status (Ref. = Yes)			
Not in a relationship	−0.008 (0.037)	−0.005 (0.038)	−0.008 (0.037)
No response	−0.011 (0.071)	−0.008 (0.073)	−0.009 (0.071)
Child in Household < 18 (Ref. = No)			
Yes	−0.028 (0.036)	−0.027 (0.037)	−0.029 (0.036)
No response	0.029 (0.036)	0.026 (0.037)	0.029 (0.036)
Lessons in school (Ref. < 25 h)	0.009 (0.027)	0.013 (0.028)	0.009 (0.027)
Observations	5583	5616	5587
R²	0.256	0.216	0.254

Standardized beta coefficients; standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, and *** $p < 0.001$.**Table A5.** Contrasts with the Bonferroni correction (emotional exhaustion, Model 2).

	Contrast	Std. Err.	t	$p > t $
Secondary school vs. primary school	−0.006	0.325	−0.18	1.000
Grammar school vs. primary school	−0.010	0.032	−0.33	1.000
Comprehensive school vs. primary school	−0.046	0.030	−1.54	0.003
Vocational school vs. primary school	−0.136	0.037	−3.69	1.000
Special needs school vs. primary school	0.019	0.036	0.54	1.000
Grammar school vs. secondary school	−0.004	0.038	−0.12	1.000
Comprehensive school vs. secondary school	−0.040	0.036	−1.11	1.000
Vocational school vs. secondary school	−0.130	0.042	−3.08	0.031
Special needs school vs. secondary school	0.025	0.041	0.61	1.000
Comprehensive school vs. grammar school	−0.036	0.036	−1.01	1.000
Vocational school vs. grammar school	−0.126	0.042	−3.02	0.038
Special needs school vs. grammar school	0.030	0.040	0.73	1.000
Vocational school vs. comprehensive school	−0.090	0.041	−2.22	0.398
Special needs school vs. comprehensive school	0.066	0.039	1.67	1.000
Special needs school vs. vocational school	0.156	0.045	3.47	0.008

Note: Contrasts are based on Model 2 in Table A4.

Table A6. Contrasts with the Bonferroni correction (emotional exhaustion, Model 3).

	Contrast	Std. Err.	t	$p > t $
Secondary school vs. primary school	−0.011	0.028	−0.39	1.000
Grammar school vs. primary school	0.031	0.027	1.12	1.000
Comprehensive school vs. primary school	−0.053	0.025	−2.15	0.476
Vocational school vs. primary school	−0.110	0.034	−3.22	0.019
Special needs school vs. primary school	0.006	0.028	0.23	1.000
Grammar school vs. secondary school	0.041	0.033	1.25	1.000
Comprehensive school vs. secondary school	−0.042	0.031	−1.38	1.000
Vocational school vs. secondary school	−0.099	0.039	−2.56	0.158
Special needs school vs. secondary school	0.017	0.033	0.52	1.000
Comprehensive school vs. grammar school	−0.084	0.030	−2.75	0.090
Vocational school vs. grammar school	−0.140	0.038	−3.66	0.004

Table A6. Cont.

	Contrast	Std. Err.	t	$p > t $
Special needs school vs. grammar school	−0.024	0.033	−0.73	1.000
Vocational school vs. comprehensive school	−0.057	0.037	−1.55	1.000
Special needs school vs. comprehensive school	0.060	0.031	1.94	0.795
Special needs school vs. vocational school	0.116	0.039	3.01	0.040

Note: Contrasts are based on Model 3 in Table A4.

References

- Bakker, A. B., & Demerouti, E. (2007). The job demands-resources model: State of the art. *Journal of Managerial Psychology*, 22(3), 309–328. [\[CrossRef\]](#)
- Bakker, A. B., & Demerouti, E. (2024). Job demands–resources theory: Frequently asked questions. *Journal of Occupational Health Psychology*, 29(3), 188–200. [\[CrossRef\]](#) [\[PubMed\]](#)
- Bakker, A. B., Demerouti, E., & Sanz-Vergel, A. (2023). Job demands–resources theory: Ten years later. *Annual Review of Organizational Psychology and Organizational Behavior*, 10(1), 25–53. [\[CrossRef\]](#)
- Besa, K.-S., Gesang, J., Kruse, C., & Rothland, M. (2022). Schulleitungshandeln und Kooperationsklima als Prädiktoren von Arbeitszufriedenheit und Mitarbeiterbindung an Schulen. *Zeitschrift für Pädagogik*, 68(6), 869–880. [\[CrossRef\]](#)
- Cann, R., Sinnema, C., Rodway, J., & Daly, A. J. (2023). What do we know about interventions to improve educator wellbeing? A systematic literature review. *Journal of Educational Change*, 25, 231–270. [\[CrossRef\]](#)
- Craney, T. A., & Surles, J. G. (2002). Model-dependent variance inflation factor cutoff values. *Quality Engineering*, 14(3), 391–403. [\[CrossRef\]](#)
- Dicke, T., Stebner, F., Linninger, C., Kunter, M., & Leutner, D. (2017). A longitudinal study of teachers' occupational well-being: Applying the job demands–resources model. *Journal of Occupational Health Psychology*, 22(2), 262–277. [\[CrossRef\]](#) [\[PubMed\]](#)
- Dreer, B. (2023). On the outcomes of teacher wellbeing: A systematic review of research. *Frontiers in Psychology*, 14, 1205179. [\[CrossRef\]](#) [\[PubMed\]](#)
- Fey, C. F., Hu, T., & Delios, A. (2023). The measurement and communication of effect sizes in management research. *Management and Organization Review*, 19(1), 176–197. [\[CrossRef\]](#)
- Hascher, T., Beltman, S., & Mansfield, C. (2021). Teacher wellbeing and resilience: Towards an integrative model. *Educational Research*, 63, 416–439. [\[CrossRef\]](#)
- Hascher, T., & Waber, J. (2021). Teacher well-being: A systematic review of the research literature from the year 2000–2019. *Educational Research Review*, 34, 100411. [\[CrossRef\]](#)
- Kassis, W., Vasiou, A., Govaris, C., Favre, C., Aksoy, D., & Graf, U. (2024). Social and individual factors predicting students' resilience: A multigroup structural equation model. *Education Sciences*, 14(1), 15. [\[CrossRef\]](#)
- Mansfield, C. F. (2021). Promoting teacher resilience in challenging educational settings. *Educational Practice and Theory*, 43(1), 23–37.
- Maslach, C., Jackson, S. E., & Leiter, M. (1996). *Maslach burnout inventory—Educators survey—Manual* (3rd ed.). Consulting Psychologists Press.
- MSB NRW. (2024). *Das Schulwesen in Nordrhein-Westfalen aus quantitativer Sicht 2023/2024. Statistische Übersicht Nr. 425*. MSB NRW.
- Nieminen, P. (2022). Application of standardized regression coefficient in meta-analysis. *BioMedInformatics*, 2(3), 434–458. [\[CrossRef\]](#)
- Reintjes, C., Bellenberg, G., Kaiser, T., & Winter, I. (2025). *Frühjahrsreport 2025: Psychische gesundheit an schulen in nordrhein-westfalen*. GEW NRW.
- Robert Bosch Stiftung. (2022). *Das deutsche Schulbarometer: Aktuelle Herausforderungen der Schulen aus Sicht der Lehrkräfte. Ergebnisse einer Befragung von Lehrkräften allgemeinbildender und berufsbildender Schulen durchgeführt von forsa gesellschaft für sozialforschung und statistische analysen mbH*. Robert Bosch Stiftung.
- Schaarschmidt, U., & Kieschke, U. (2013). Beanspruchungsmuster im lehrerberuf ergebnisse und schlussfolgerungen aus der potsdamer lehrerstudie. In M. Rothland (Ed.), *Belastung und beanspruchung im lehrerberuf*. Springer VS.
- Schaufeli, W., & Bakker, A. (2003). *Utrecht work engagement scale: Preliminary manual*. Occupational Health Psychology Unit, Utrecht University.
- Schulze-Hagenest, T., Carstensen, B., Weber, K., Jansen, T., Meyer, J., Köller, O., & Klusmann, U. (2023). Teachers' emotional exhaustion and job satisfaction: How much does the school context matter? *Teaching and Teacher Education*, 136, 1–12. [\[CrossRef\]](#)
- Schumacher, J., Leppert, K., Gunzelmann, T., Strauß, B., & Brähler, E. (2005). Die resilienzskaala—Ein fragebogen zur erfassung der psychischen widerstandsfähigkeit als personmerkmal. *Zeitschrift für Klinische Psychologie und Psychotherapie*, 53(1), 16–39.
- Solga, H. (2008). *Wie das deutsche Schulsystem Bildungsungleichheiten verursacht*, WZBrief Bildung, No. 01. Wissenschaftszentrum Berlin für Sozialforschung (WZB).

- Thönes, K. V., Reintjes, C., & Bellenberg, G. (2024). Wohlbefinden als gegenstand von eignungsreflexion und professionalisierung. In J. Holle, P. Gollub, & W. Böttcher (Eds.), *Eignungsabklärung und -reflexion im Lehramt* (pp. 292–304). Waxmann.
- Wartenberg, G., Aldrup, K., Grund, S., & Klusmann, U. (2023). Satisfied and high performing? A meta-analysis and systematic review of the correlates of teachers' job satisfaction. *Educational Psychology Review*, 35, 114. [[CrossRef](#)]

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